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EXAMINER	
MA, CALVIN	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/686,323	Applicant(s) CRUZ-HERNANDEZ ET AL.	
	Examiner CALVIN C. MA	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 December 2010_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-25_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-25_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _12/17/2010_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment to the limitations of claims 1-11 and 23-25 in the reply filed on 12/17/2011 has been considered, and the prior art Anderson (US Patent: 6,954,899) previously used for rejection on claim 12-22 has been introduced in response to these amendments.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 12-22 are rejected under 35 U.S.C. 103(a), as being unpatentable over Anderson (US Patent: 6,954,899) in view of Chen (US Patent: 7,081,883).

As to claim 16, Anderson teaches a switch (i.e. the touch sensitive control device 203 that include a computer display) comprising:

a sensor (i.e. the touch pad controlling surface) (see Fig. 1, Col. 4, Lines 1-67); an actuator (i.e. haptic feedback actuator) (see Fig. 3) configured to output a haptic

effect (i.e. the actuator creates haptic feedback to form feedback guidance effect for the scrolling bar 331) (see Fig. 3a, Col. 5, Lines 1-25); and

a processor (i.e. the microprocessor of the computer the control the display system which run the pseudo code) in communication with the sensor and the actuator (i.e. both the sensor and actuator are in communication with the computer processor to receive the input and then outputting appropriate feedback) (see Fig. 3a, Col. 5, Lines 15-25), the processor configured to receive a sensor signal from the sensor, and to cause the actuator to generate a haptic effect based at least in part on the sensor signal, wherein the haptic effect comprises a plurality of detents (i.e. the detents are the edges of the display pad and the various area that creates the unique control zones where the user are given unique feed backs) (see Fig. 3a, 3b, Col. 5, Line 1 - Col. 6, Line 37) defining a first primary channel (i.e. the up directional channel of control along the Y axis) defined along a second axis (i.e. the Y-axis on display area), a first secondary channel (i.e. the diagonal control channel at 45 degree of Y-axis up direction) proximate to the first primary channel, and a second primary channel (i.e. the right directional control channel in the X-axis) proximate to the second primary channel (i.e. the diagonal control at channel 45 degree of X-axis right direction), the detents configured to substantially constrain movement to one of the first primary channel, the second primary channel, the first secondary channel, or the second secondary channel (i.e. computer is able to output unique detect along each of the axis of the display to coordinate cursor function which user experiences that include scrolling both

horizontally and vertically, zooming in and out to interact with user's motions during the feedback) (see Fig. 3a, 3b, Col. 5, Line 1 - Col. 6, Line 37).

However Anderson is silent about having each channel is a substantially one-dimensional channel, the first primary channel intersects the second primary channel, the first secondary channel intersects one of the first or second primary channel and the second secondary channel intersects one of the first or second primary channels or the first secondary channel. Chen teaches each channel is a substantially one-dimensional channel, the first primary channel intersects the second primary channel, the first secondary channel intersects one of the first or second primary channel and the second secondary channel intersects one of the first or second primary channels or the first secondary channel (i.e. in Chen's dual touch control interface the channels are divided into two primary set and two secondary set of X and Y channel where the user interact with each of the finger where the primary channel and secondary channel intersect in the actual plan of control of the computer) (see Chen Fig. 6A, 6B, Col. 6, Lines 13-60).

Therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used Chen's dual finger control system in place of the touch screen interface for the overall haptic feedback input system of Anderson in order to achieve a input system allow six degree of freedom input (see Chen Col. 1, Lines 25-40).

As to claim 12, Anderson teaches the switch of claim 16, wherein the switch (i.e.. the touch control surface) comprises a circular shape (i.e. the control pad has a circular

control area 104 are the area defining the range of motion) (see Fig. 1, Col. 3, Lines 18-25).

As to claim 13, Anderson teaches the switch of claim 16, wherein the switch comprises an eight-way switch (i.e. the control pad interface allow the user to move in any direction to for meaningful interaction with object on the display this means that the control is at least eight way with the x y directions and their corresponding diagonal control directions) (see Fig. 3b, 3c, Col. 5, Lines 1-67).

As to claim 14, Anderson teaches the switch of claim 16, further comprising providing a biasing element (i.e. element providing the user transitional feedback which inverse feedback control) proximate to a center of the switch (i.e. the biasing element is the haptic responses according to software control based on transitional capability as shown on the display in Fig. 3c where the user receives additional feedbacks moving to 341) (see Fig. 3c, 3d, Col. 6, Lines 8-67).

As to claim 15, Anderson teaches the switch of claim 16, further comprising providing a detent (56) proximate to a radius of the switch (i.e. since the display control interface is able to create control area at will on the display surface the as seen in figure 3d, the detect created by the haptic area 344 is proximate to a radius of the control

screen as a whole) (see Fig. 3d, Col. 6, Lines 37-67).

As to claim 17, Anderson teaches the switch of claim 16, further comprising: a third primary channel defined substantially co-axial with the first primary channel (i.e. the channel formed by a secondary surface from outside of the display area, since the display panel can have separate behavior in terms of haptic control with respect of the area that is outside of this zone, the zone not making the display can for separate channel of feedback for the user) disposed about a first axis (Y axis); (see Fig. 3c, Col. 6, Lines 1-40);

a fourth primary channel defined substantially co-axial with the second primary channel (i.e. the channel formed by the X-axis motion in area outside of the display area) (see Fig. 3c);

a third secondary channel defined proximate to the third primary channel (i.e. the diagonal control at channel 45 degree of X-axis down direction in the area not displaying the image on screen) (see Fig. 3c);

and a fourth secondary channel defined proximate to the fourth primary channel (i.e. the diagonal control at channel 45 degree of X-axis left direction outside of the image display area) (see Fig. 3c).

As to claim 18, Anderson teaches the switch of claim 17, wherein the first axis is substantially orthogonal to the second axis (i.e. by definition x and y axis in the Cartesian coordinate system are orthogonal with each other) (see Fig 3a, 3c)

As to claim 19, Anderson teaches the switch of claim 16, wherein the first secondary channel is oblique to the first primary channel (i.e. the first secondary channel can be formed by the movement of the control pad 18 diagonally up and to the right which is oblique to the first primary channel) (see Fig. 3a-3d, Col. 5, Lines 1-66);

and the second secondary channel is oblique to the second primary channel (i.e. the second secondary channel can be formed by the movement of the control pad 18 diagonally down and to the left which is oblique to the second primary channel) (see Fig. 3a-3d, Col. 5, Lines 1-66).

As to claim 20, Anderson teaches the switch of claim 16, wherein the first secondary channel is substantially orthogonal to the first primary channel (i.e. the first secondary channel can be formed by the movement of cursor on the surface area as seen in the haptic box area 341) (see Fig. 3c);

and the second secondary channel is substantially orthogonal to the second primary channel (i.e. the second secondary channel can be formed by the movement of the control pad 18 vertically up which is orthogonal to the second primary channel) (see

Fig. 3c).

As to claim 21, Anderson teaches the switch of claim 17, wherein the third secondary channel is oblique to the third primary channel (i.e. the first secondary channel can be formed by the movement of cursor on the surface area as seen in the haptic box area 341) (see Fig. 3c); and the fourth secondary channel is oblique to the fourth primary channel (see Fig. 3c).

As to claim 22, Anderson teaches the switch of claim 17, wherein the third secondary channel is substantially orthogonal to the third primary channel (i.e. the first secondary channel can be formed by the movement of cursor on the surface area as seen in the haptic box area 341) (see Fig. 3c);

and the fourth secondary channel is substantially orthogonal to the fourth primary channel (see Fig. 3c);

4. Claims 1-11 and 23-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Fish (US Patent: 6,819,312) in view of Tarr et al. (US Patent: 6,084,587), Reinkensmeyer et al. (US Patent: 6,631,000) and Anderson (US Patent: 6,954,899).

As to claim 1, Fish teaches a method comprising: defining a graphic user interface having a plurality of input elements (604) arranged in a matrix configuration (i.e. the 3 x 3 array of haptels 604 which allow the user to input into the graphic interface

of the computing system) (see Fig. 6A, Col. 8, Lines 63- 67);

defining a first cell, the first cell comprising representing a first haptic effect (i.e. since more than one of the haptel can be grouped to together to output a haptic feedback) (see Fig. 10, Col. 17, Lines 10-40);

assigning the first cell to a first graphic input element in the matrix configuration (i.e. the step 1012 seek out each haptel to assign them into the cell) (see Fig. 10, Col. 17, Lines 10-40);

assigning the first cell to a second graphic input element in the matrix configuration (i.e. the step 1012 seek out another haptel to assign it into the cell that may include all of the haptels) (see Fig. 10, Col. 17, Lines 10-40);

receiving a sensor signal from a sensor, the sensor configured to detect a movement of a user manipulatable object of an interface device and the sensor signal associated with the movement (i.e. the control processor 904 examiner the sensor data where both the of the haptel area is contacted by the step 1008, and the computer having display cursor which are objects that in interacted upon by the touch control system) (see Fig. 10, Col. 16, Lines 66-67); and

determining a position of a graphic object based at least in part on the sensor signal; and outputting the first haptic effect based at least in part on the first parameter and the interactions (i.e. the haptic feedback effect is outputted back on the user interaction and the processor assigned haptic feedback type) (see Col. 17, Lines 46-60).

However Fish does not explicitly teach a first parameter and manipulatable object

of an interface device and the haptic effect configured to resist or assist the movement of the user manipulatable object. Tarr teaches a first parameter (i.e. the parameter can be the coefficient of friction that affect the haptic feedback) (see Fig. 7, Col. 9, Lines 55-61).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the haptic interaction control of Tarr in the overall haptic control device of Fish in order to add the ability to define a haptic VR space independently of a graphical space to provide greater degree of flexibility. (See Tarr Col. 1, Lines 59-63)

Reinkensmeyer teaches feedback effect guide a movement of a user manipulatable object of an interface device (i.e. as the user manipulatable joystick in an object which can function together with the touch control system interface to create a user feedback system) (see Reinkensmeyer, Fig. 2-4, Col. 13, Lines 1-31), the haptic effect configured to resist or assist the movement of the user manipulatable object (i.e. the user is allow to rehab using the joystick interface where assistance and resistance is set to allow for progressive interaction and rehabilitation) (see Reinkensmeyer, Fig. 2, Col. 3, Lines 10-35).

Therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the joystick based interface control design of Reinkensmeyer in addition to the touch pad haptic feedback control system of Fish in order to create a system for user rehabilitation) (see Reinkensmeyer, Col. 3, Lines 1-35).

However Fish does not explicitly teach determining an interaction between the position of the graphical object and a least one of the plurality of graphical input elements, Anderson teaches determining an interaction between the position of the graphical object and at least one of the plurality of graphical input elements (i.e. the computer is able to output unique detection of the users movement along each of the axis of the display to coordinate cursor function, which user experience in the scrolling actions which functions both in horizontally and vertically directions and also allow the display to zoom in and out to interact with user's motions during the feedback) (see Anderson, Fig. 3a, 3b, Col. 5, Line 1 - Col. 6, Line 37).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used to scrolling control capability of Anderson in the overall input display system of Fish in order to allow the user intuitive control of the display input system (see Anderson Col. 2, Lines 20-25).

As to claim 23, see discussion of claim 1 above, claim 23 is analyzed as the same as claim 1, where the only variation is the substitution of a computer program stored in a computer readable medium, and is rejected on the same ground.

As to claim 2, Fish teaches the method of claim 1, further comprising communicating the first cell from a first processor (i.e. computer CPU) to a second processor (904) (i.e. since the haptic control processor 904 must communicate with the received the processes to be outputted) (see Fig. 16, Col. 21 Lines 40-55, Col. 22,

Lines 1-13) (see Fish Fig. 6, 7, Col. 9, Line 48-Col. 10, Line 23).

As to claim 3, Fish teaches the method of claim 2, further comprising: defining a second cell (i.e. another area on the haptic grid that represent a virtual object of Tarr), the second cell comprising a second parameter (i.e. another one of the parameters of the sub-construct, for example texture) representing a second haptic effect (i.e. the parameter that factor into how the haptic interactions are applied to the user, when the user interacts with the object in the virtual space, which represents another type of haptic effect) (see Tarr, Fig. 2, Col. 5, Lines 55-65); communicating the second cell from the first processor (i.e. computer CPU) to the second processor (i.e. the control processor of the haptic device 940); and assigning the second cell to a third input element in the matrix configuration (i.e. since the second cell object can be assigned to another haptel 604 in the grid) (see Fish Fig. 6, 7, Col. 9, Line 48-Col. *10,* Line 23).

As to claim 4, Fish teaches the method of claim 3, wherein the first and second cells are defined by the first processor (i.e. the processor of the computer that create the virtual object and processes it and represent it with a haptic feedback) and the first, second, and third input elements are assigned by the second processor (i.e. the control processor 904 assign the haptels to deliver the haptic feedback for each of the objects) (see Fish Fig. 6, 7, Col. 9, Line 48-Col. 10, Line 23).

As to claim 5, Fish teaches the method of claim 3, wherein the third location is disposed between the first and second input element (i.e. since the haptel grid is show with a 3 x 3 matrix the third location is the middle haptel on the grid) (see Fig. 6A, Col. 8, Lines 63-67).

As to claim 6, Fish teaches the method of claim 1, wherein the matrix configuration comprises a square shape (i.e. since the haptel grid is show with a 3 x 3 matrix in a square shape) (see Fig. 6A, Col. 8, Lines 63-67).

As to claim 7, Tarr teaches the method of claim 1, wherein the matrix configuration comprises a circular shape (i.e. the matrix, a higher level object can be circles which can be implemented as a plurality of haptels arrange in a circular shapes) (see Tarr Col. 6, Lines 6-7).

As to claim 8, Tarr teaches the method of claim 1, wherein the first cell comprises a first detent and the second cell comprises a second detent (since during a collision with the cells (sub-constructs) the user are prevented from penetrate the object, the cell comprises detent that allow limitation of user movement in the virtual space) (see Tarr Cot 7, Lines 20-34)

As to claim 9, Fish teaches the method of claim 3, further comprising providing an actuator (i.e. any one of the moving assembly 100 affect all of the other haptels and

are controlled together) in communication with the first, second, and third input element (i.e. since the haptic feedback grid is coordinate by the computer CPU to express complex haptic interactions each of the actuator 100 are communication with the surface sensor relevant to each of the three haptels and controlled together) (see Fish Fig. 1, 6A, Col. 9, Lines 1-45, Col. 10, Lines 7-60).

As to claim 10, Fish teaches the method of claim 2, wherein the second processor is disposed remotely from the first processor (i.e. the processor is capable of communicating RS-232 cable means that they are remotely connected to operate) (See Fish Fig. 7, Col. 10, Lines 7-25).

As to claim 11, Tarr teaches the method of claim 1, wherein the first cell comprises an arc and first and second edges (i.e. since the virtual object can be a sum of various other sub-construct object such as a line or shapes) (see Fig. 1-3, Col. 5, Lines 40-55, Col. 6, Lines 1-23);

and wherein the haptic effect comprises a plurality of force vectors within the first cell, the force vectors directed outward from a centerline of the first cell toward the first and second edges (i.e. the various parameter that is able to be assigned to the objects such as viscosity and acceleration are force vectors, since during the user interactions these elements direct the forces that is applied the user; also since the force must be applied from a point in the virtual space the object in virtual space when interacting with

the user will direct force in a radial manner from a give point) (see Col. 5, Lines 55-65)

As to claim 24, Fish teaches the computer-readable medium of claim 23, further comprising program code for communicating the first cell from a first processor to a second processor (i.e. the processor is capable of communicating RS-232 cable means that they are remotely connected to operate) (See Fish Fig. 7, Col. 10, Lines 7-25).

As to claim 25, Fish teaches The computer-readable medium of claim 24, further comprising: program code for defining a second cell, the second cell comprising a second parameter representing a second haptic effect; program code for communicating the second cell from the first processor to the second processor; and program code for assigning the second cell to a third input element in the matrix configuration (i.e. since the haptel grid functions together to form a virtual grid of feedback the various underlying effect is created by the computer generated cell of haptel feedback zone which requires the both processor be driven together for multiple feedback) (see Fish, Col. 17, Lines 1-25).

Response to Arguments

5. Applicant's arguments with respect to claims 1-11, 23-25 have been considered but are moot in view of the new ground(s) of rejection.

6. Applicant's arguments filed 12/17/2010 with respect to claims 12-22 have been fully considered but they are not persuasive. The applicant argues in pages 10-14 regarding claims 12-22 that Anderson in view of Chen does not disclose or suggest "channels" nor that "the plurality of detects configured to substantially constrain movement of an interface device to one of the first primary channel, the second primary channel, the first secondary channel, or the second secondary channel, wherein: each channel is a substantially one-dimensional channel; the examiner disagree with the applicant's analysis where the prior art does not teach channels as described in claims 16, this is because Anderson teaches the scroll movement of the user being confined in a set linear position and creating a digital representation of such one dimensional movement on the display as shown in figure 3a of Anderson, this scrolling control displayed on the screen describes a channel by which the users finger can interact with moving the display in a set directions. Since the scrolling requires a continuous feedback loop to be established where the user's actions and the computer's response are inter-connected in both horizontal directions and vertical directions there exists at least two primary channels of user movement to achieve the actions of scrolling on the display. Anderson then further elaborates on this idea in figure 3b where the user's movements are constrains in a cubical shape area on the display in a three dimensional configurations this is in fact creating multiple channels of user interactions with the computing device; the user would detect feed back when the finger is travelling along any of the boundary segment as displayed. In this way the user establishes communication with the computing device via the establish channel of movement to

achieve a functional integration of the feedback based control. Therefore, the limitations of claims 12-22 still read on the prior arts.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Calvin Ma whose telephone number is (571) 270-1713. The examiner can normally be reached on Monday - Friday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quan-Zhen Wang can be reached on 571-272-3114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Calvin Ma
February 22, 2011

/Quan-Zhen Wang/
Supervisory Patent Examiner, Art Unit 2629